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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/798,714

03/10/2004

Emerson R. Gallagher

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10/11/2007

SEED INTELLECTUAL PROPERTY LAW GROUP PLLC

701 FIFTH AVE

SUITE 5400

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EXAMINER

CREPEAU, JONATHAN

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

10/11/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/798,714

Applicant(s)

GALLAGHER ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☒ Claim(s) 9-12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/28/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of species (ii) in the reply filed on August 10, 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Since species (ii) has been examined and been found to be allowable herein, the search has been extended to cover species (i). An action on the merits follows.

Information Disclosure Statement

2. The citation of 10/661,033 on the IDS of 7/28/04 has been crossed out because the provided serial number is incorrect (it should be 10/661,093), and additionally the application was converted to provisional application serial no. 60/608,934 and was never published.

Drawings

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR

1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-027670 in view of Hamada et al (U.S. Pre-Grant Publication No. 2002/0068215).

JP '670 teaches a fuel cell stack comprising a plurality of membrane electrode assemblies, each assembly comprising respective fluid distribution layers (60) and catalyst layers (7) sandwiching the electrolyte layer (see abstract, Fig. 1). The assemblies are stacked in an alternating manner such that the polarities of adjacent assemblies are opposite (see abstract). The assemblies are externally jumpered via leads (14) (see abstract; Figs. 1, 5). Regarding claim 2, a spacer (10) is located between the assemblies, which spacer must inherently be electrically insulating for the fuel cell to properly function. Regarding claim 3, the schematic of Fig. 5 shows the claimed electrical connections. Regarding claim 6, the electrode substrates

(distribution layers) inherently comprise an “electrically conductive material having a high in-plane conductivity.”

The abstract of JP ‘670 does not expressly teach that the electrolyte membrane is a polymer electrolyte membrane, as recited in claim 1, or that the distribution layers comprise wire or mesh, as recited in claims 7 and 8.

Hamada et al. is directed to a gas diffusion layer for a fuel cell having a metal mesh sheet (20) (see [0036]). In paragraphs [0004]-[0006], the reference discloses a solid polymer electrolyte.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the mesh diffusion layer of Hamada et al. in the fuel cell of JP ‘670. In [0015], Hamada et al. disclose the following:

[0015] The first object of the present invention is to solve the problems of the prior art and to supply a cheap gas diffusion layer for fuel cell excellent in water repellency, and also excellent in mechanical strength, allowing a continuous formation.

Accordingly, the artisan would be motivated to use the mesh diffusion layer of Hamada et al. in the fuel cell of JP ‘670.

Further, the artisan would be motivated to use a polymer electrolyte membrane as the electrolyte of JP ‘670, as suggested by Hamada et al. Solid polymer electrolytes offer advantages such as high efficiency and low-temperature operation. As such, the artisan would be motivated to use a polymer electrolyte membrane as the electrolyte of JP ‘670.

6. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-027670 in view of Hamada et al as applied to claims 1-3 and 6-8 above, and further in view of Thompson et al (U.S. Pre-Grant Publication No. 2005/0058865).

JP '670 does not expressly teach that the leads (14) comprise protruding edges of the fluid distribution layers, as recited in claim 4.

Thompson et al. disclose a fuel cell structure wherein tabs (50, 51) connected to plates project beyond the side of the stack and are used to connect to an external circuit (see [0033]).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art because all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. In this case, the artisan would have been sufficiently skilled to incorporate the tabs disclosed by Thompson et al. into the diffusion layers of JP'670 to provide interconnections between the membrane electrode assemblies.

Allowable Subject Matter

7. Claims 9-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

Claim 9 recites electrically conductive anode and cathode flow field plates as well as electrically insulating coolant flow field plates. In the abstract, JP '670 teaches away from the use of separator plates. Accordingly, the subject matter of claim 9 is distinguished over the reference.

Conclusion

9. A certified translation of JP '670 has been ordered and will be made of record in the next communication from the Office. If Applicant wishes to review the translation prior to filing a response, the Examiner will furnish a copy upon request.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau
Primary Examiner
Art Unit 1795
October 5, 2007